

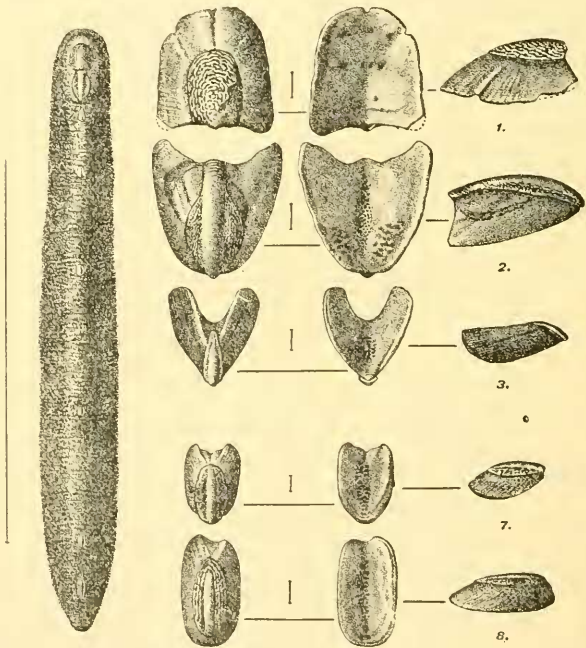
DESCRIPTION OF A NEW SPECIES OF *CRYPTOPLAX*.

By the Rev. A. H. COOKE, M.A., F.Z.S.

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CRYPTOPLAX EVANESCENS, n.sp.

Animal narrowly cylindrical, much elongated, foot exceedingly narrow; *body* thick and leathery, covered with short deciduous spines or fine scales, spines yellow or reddish-yellow; *body colour* variable, grey, yellow, or reddish, and blotched with red underneath the spines; *gill-rows* rather large, but occupying only about one-fifth of the entire length of the animal; *valves* very small, in a fresh specimen the



fourth, fifth, and sixth are scarcely visible; as the animal contracts in spirit they become more noticeable; the two front valves are the largest, third valve considerably smaller (these three valves are close together); fourth valve remote from the third, very small, hardly visible, buried deeply in the muscular integument of the back; fifth valve remote from the fourth, hardly visible; sixth valve remote from the fifth, just visible; seventh valve remote from the sixth, more conspicuous; posterior valve conspicuous, much nearer to the seventh than the seventh is to the sixth.

The *articulamentum* is relatively large in proportion to the *tegmentum*,

especially in the more buried valves; the angle of the articulation is very deeply cut, especially in valve 3.

The *sculpture* of the external portion of the valves is rude, and consists mainly of a central ridge, which slightly projects forward, forming a sort of blunt beak; this ridge in valve 1 is broadly oval, and lies on the hinder portion of the shell; in valve 2 it is prominent, and runs the whole length of the valve, with two small, longitudinally striated, lateral areas, but in valves 3, 4, and 5 it consists of a beak only; this beak area increases in size, and becomes more prominent, in the posterior valves.

Radula normal (Professor H. M. Gwatkin).

Length of full-grown specimen, $4\frac{1}{2}$ inches.

Hab.—Funafuti, South Central Pacific (Mr. J. S. Gardiner).

The nearest ally of this species appears to be *Cr. Burrowi*, E. A. Smith, from which it differs markedly in (1) its narrower form, (2) the smaller size of the valves, (3) the relative position of the valves, and (4) length of the gill-rows, which in *Burrowi* are longer in proportion to the whole length of the animal.

I am not able to say whether *pores* are present, but there is no sign of lateral tufts on the integument. The usual three slits in the anterior valve are present, but are very rude and undeveloped. Measurements of the valves are subjoined (in tenths of an inch):—

	Length.	Breadth.
Front valve . . .	.125	.125
Second ,, . . .	.125	.15
Third ,, . . .	.083	.083
Fourth ,, . . .	.07	.05
Fifth ,, . . .	.07	.05
Sixth ,, . . .	.05	.045
Seventh ,, . . .	.083	.05
Posterior ,, . . .	.1	.06

The whole animal is thus thirty-six times as long as its longest valve, and ninety times as long as its shortest.

This species may be regarded as forming, so far as our present knowledge extends, a sort of last term in the series of Chitons which exhibit gradual degradation of the valves.¹ So far as I am aware, it is the only species yet described in which, while all the valves are reduced in size, some are so far embedded in the integument that in fresh specimens they are scarcely visible.

If we may take it for granted that the original object of a molluscan shell was the protection of some vital part or parts of the organism, it is plain that in the present case, as compared with the form of shell normal in the Polyplacophora, this particular function of the shell has practically ceased to exist. But, since the vital organs may be taken to exist as before, and to be in equal need of some sort of protection—except in so far as it is afforded by increased safety of habitat—it may be safely assumed that the degradation of the valves has been accompanied by a parallel thickening or extension of the dorsal integument, so that the protection once afforded by one portion of the animal has been transferred to another.

¹ See Haddon, *Challenger Expedition*, Report on the Polyplacophora.

It is interesting to note the analogy presented by other limaciform Mollusca, in which the shell, once probably external and substantial, has become overlapped by developments of the dorsal area and has gradually disappeared from view, ultimately either vanishing altogether or becoming disintegrated, or else, as in the case of *Testacella*, completely shifting its position or becoming redeveloped in a position where a special necessity had to be provided for. In all these cases it will be found that the modification of the size or shape of the shell was, as it were, compensated for by a corresponding modification of the integument, which took its place and did its work.

It is possible that future discovery may bring to light a form or forms of Chiton in which the process of degradation has proceeded further still, and in which all the valves are markedly embedded, or in which some have even become non-existent. On a consideration of the present species and its nearest allies, one would expect the sixth, fifth, and fourth valves to disappear first, since in their case the reduction of size has proceeded furthest, while one might hazard a conjecture that the limit valves at either end would maintain their existence longest.

Mr. C. Hedley records¹ no Polyplacophora from the atoll, with the exception of a single mutilated median valve of a species of *Tonicia*, dredged at 150 fathoms. He remarks that Pease only knew of six species of Polyplacophora from the Central Pacific, a fact remarkable when it is considered how abundantly the group is represented on the west coast of South America, Australia, and New Zealand.

¹ "The Mollusca of Funafuti," Supplement : Mem. Austr. Museum, iii, pt. ix, p. 550, 1899.